

Quiz Tuesday May 30th

Lenses (finish chapter 18, 19 next class)

What did you observe when you looked through

1. concave lens - causes light to spread out-
diverging (same as convex mirror)
image is smaller and upright and virtual

2. convex lens - light focuses - converging (same
as concave mirror)

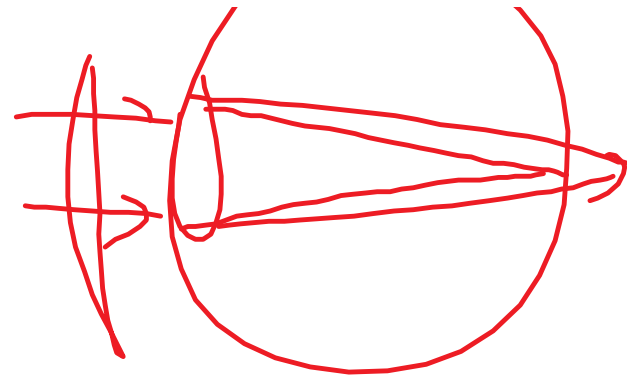
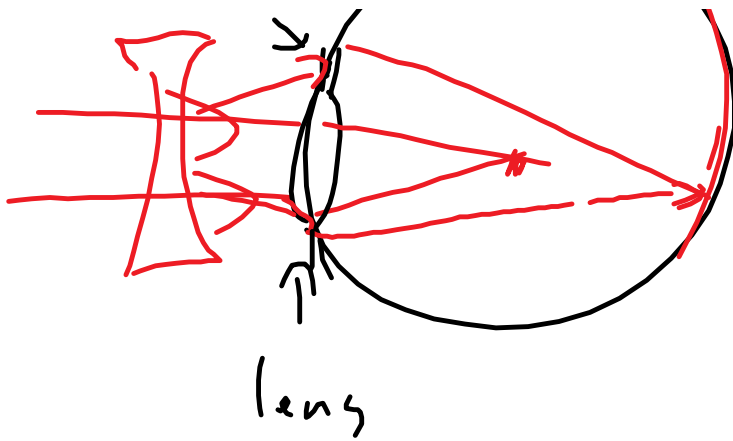
image is a) if $u > f$ then it is flipped - real

b) if $u < f$ then it is upright and enlarged and virtual

Power, $P = 1/f$ in units of diopters, $D = 1/m$

if your glasses have a power of 4.0 Diopters,
then they are convex (positive) and focal length
of 0.25m ($1/4D$)





eyeball

For two lenses close together, the total power is about the sum of the two lenses.

$P = P_1 + P_2$ for two close lenses.

Standard eyeball = 2.5cm (ish)

IB - near point, D, is the closest your eye can focus easily. Commonly given as 25 cm.

eg. 1. You look at some text with size 0.75 cm through a lens. What is the size and location of the image of the text if you place the lens 4.0 cm away and the lens is

- a) concave, $f = -6.0$ cm
- b) convex, $f = 3.0$ cm
- c) convex, $f = 6.0$ cm

use a scale ray diagram and the lensmaker's equations.

2. You use two convex lenses $f=3.0$ cm and 6.0 cm to observe the text.
- a) what is the combined focal length of the two lenses if they are close together?
 - b) if you put the 3.0cm f lens 4.0 cm from the text and the 6.0 cm lens 10.0 cm from the first lens, draw a ray diagram showing the resulting image (use the image from the first lens as the object for the second lens).

p381-383 Q13-20, p386 CR 2.1-2.4